

23286

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau

(43) International Publication Date  
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number  
WO 2004/047379 A3(51) International Patent Classification<sup>7</sup>: H04L 12/56(21) International Application Number:  
PCT/EP2003/012551(22) International Filing Date:  
11 November 2003 (11.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
TO2002A001009  
20 November 2002 (20.11.2002) IT

(71) Applicant (for all designated States except US): TELECOM ITALIA S.P.A. [IT/IT]; Piazza Degli Affari, 2, I-20123 Milano (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BAIAMONTE, Valeria [IT/IT]; Via San Paolo, 45, I-10141 Torino (IT). FRANCESCHINI, Daniele [IT/IT]; Telecom Italia s.p.a., Via G. Reiss Romoli, 274, I-10148 Torino (IT).

(74) Agent: GIANNESI, Pier, Giovanni; Pirelli &amp; C. S.p.A., Viale Sarca, 222, I-20126 Milano (IT).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

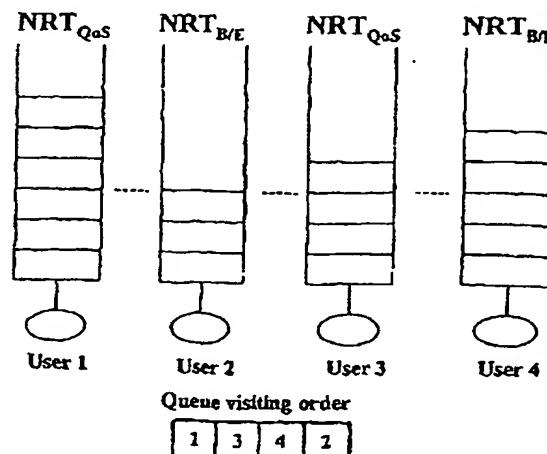
## Declarations under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: METHOD, SYSTEM AND COMPUTER PROGRAM PRODUCT FOR MANAGING THE TRANSMISSION OF INFORMATION PACKETS IN A TELECOMMUNICATION NETWORK



(57) Abstract: To manage the transmission of information packets on channels of a telecommunications network, the packets are organised into user queues received in respective buffers, measuring the occupancy level of the buffers. The users are sorted into respective classes (RT, NRT) identified by the service mode requested. After determining the propagation conditions on the transmission channel respectively associated to said users, the priority in the transmission of the packets is determined, choosing the order in which the respective queues are visited as a function of:  
- a first level priority, linked to whether the users belong to the respective classes of service (RT, NRT),  
- a second level priority, linked to at least a parameter chosen between the level of occupancy of the respective buffer and the propagation conditions of the respective channel.

WO 2004/047379 A3

BEST AVAILABLE COPY

BEST AVAILABLE

19235  
PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

To:

GIANNESI, Pier, Giovanni  
Pirelli & C. S.p.A.  
Viale Sarca, 222  
I-20126 Milano  
ITALIE

TEL 0823



— *of inventorship (Rule 4.17(iv)) for US only*

(88) **Date of publication of the international search report:**  
20 January 2005

**Published:**

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/12551

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 H04L12/56		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/76304 A (ERICSSON TELEFON AB L M) 11 October 2001 (2001-10-11) abstract; claims 1,4,5,7; figures 3a-5,10a-13 page 18, line 11 – page 20, line 12 *Idem*	13-16, 31-34,38
Y	----- WO 00/62572 A (ERICSSON TELEFON AB L M) 19 October 2000 (2000-10-19) abstract; figures 2-4,7 page 13, line 3 – line 10 page 16, line 15 – page 17, line 2 page 18, line 3 – page 19, line 5; claim 3	17-19, 35-37
	----- -/-	17-19, 35-37
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		<input checked="" type="checkbox"/> Patent family members are listed in annex.
<b>* Special categories of cited documents :</b>		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "E" document member of the same patent family		
Date of the actual completion of the international search  22 November 2004		Date of mailing of the international search report  30/11/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2200 HV Rijswijk Tel (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  Danielidis, S

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/12551

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/28760 A (NOKIA NETWORKS OY ; RINNE MIKKO (FI); SALONEN JANNE (FI); AHMAVAARA KA) 18 May 2000 (2000-05-18) abstract; claims 1,2,8; figures 1,2 page 5, line 1 - line 20 page 10, line 30 - page 11, line 17	7-10, 25-28,38
X	DE 199 07 085 C (SIEMENS AG) 13 April 2000 (2000-04-13) column 3, line 1 - line 16 column 4, line 8 - line 31 column 2, line 62 - line 68	1,20
X	EP 1 154 665 A (LUCENT TECHNOLOGIES INC) 14 November 2001 (2001-11-14) abstract; claims 1,5; figures 1,4,5 column 4, line 52 - column 5, line 56 column 6, line 56 - column 7, line 5	1,20
X	WO 02/085061 A (QUALCOMM INC) 24 October 2002 (2002-10-24) page 19, paragraph 1070 page 22, paragraph 1080 - page 23, paragraph 1083	1,20
A	US 5 914 950 A (LIN YU-CHUAN ET AL) 22 June 1999 (1999-06-22) column 8, line 33 - line 65 column 15, line 14 - line 36	1-38
A	EP 0 999 674 A (LUCENT TECHNOLOGIES INC) 10 May 2000 (2000-05-10) abstract; figures 4,5 column 9, line 3 - line 56 column 2, line 3 - line 21	1-38
A	WO 01/63851 A (NOKIA NETWORKS OY ; KOLA TERO (FI); RAITOLA MIKA (FI); KOLEHMAINEN MIK) 30 August 2001 (2001-08-30) page 4, line 1 - line 30	27-30

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No  
PCT/EP 03/12551

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0176304	A	11-10-2001	US AU WO	6760303 B1 3965001 A 0176304 A1		06-07-2004 15-10-2001 11-10-2001
WO 0062572	A	19-10-2000	US AU AU CA CN EP JP WO TW	6507567 B1 772657 B2 4156900 A 2369647 A1 1135887 B 1169878 A1 2002542687 T 0062572 A1 546975 B		14-01-2003 06-05-2004 14-11-2000 19-10-2000 21-01-2004 09-01-2002 10-12-2002 19-10-2000 11-08-2003
WO 0028760	A	18-05-2000	FI AU BR CA CN EP WO JP JP	982417 A 1273800 A 9915079 A 2348457 A1 1325601 T 1125460 A2 0028760 A2 3369548 B2 2002530027 T		07-05-2000 29-05-2000 17-07-2001 18-05-2000 05-12-2001 22-08-2001 18-05-2000 20-01-2003 10-09-2002
DE 19907085	C	13-04-2000	DE EP	19907085 C1 1030530 A2		13-04-2000 23-08-2000
EP 1154665	A	14-11-2001	DE EP JP	60014855 D1 1154665 A2 2002027562 A		18-11-2004 14-11-2001 25-01-2002
WO 02085061	A	24-10-2002	US EP WO	2002183066 A1 1378144 A1 02085061 A1		05-12-2002 07-01-2004 24-10-2002
US 5914950	A	22-06-1999	AU CN EP JP TW WO US ZA	7246698 A 1141850 C 0974237 A2 2001519123 T 391099 B 9845966 A2 5923650 A 9802973 A		30-10-1998 10-03-2004 26-01-2000 16-10-2001 21-05-2000 15-10-1998 13-07-1999 13-10-1998
EP 0999674	A	10-05-2000	US CA DE EP JP JP	6529499 B1 2279030 A1 69916747 D1 0999674 A1 3492950 B2 2000196664 A		04-03-2003 22-03-2000 03-06-2004 10-05-2000 03-02-2004 14-07-2000
WO 0163851	A	30-08-2001	AU BR CN WO EP JP	4058601 A 0108525 A 1419766 T 0163851 A1 1258117 A1 2003524335 T		03-09-2001 15-04-2003 21-05-2003 30-08-2001 20-11-2002 12-08-2003